

Amendment to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of all claims:

1. (currently amended) A closed loop slurry processing system for pumping slurry from a slurry processing unit installed on a dredging barge to an on-shore treatment facility of the type including a containment vessel for receiving contaminated slurry, means for discharging a chemical decontamination reagent into the containment vessel for treating the slurry, and means for separating sludge from the slurry, thereby yielding process treatment water and treated sludge for disposal or further treatment, the closed loop slurry processing system comprising in combination:

a dredging barge;

~~a hopper installed on the dredging barge for receiving and containing contaminated sludge dredged from a body of water;~~

a slurry processing unit installed on the dredging barge, the slurry processing unit including a hopper for receiving and containing sludge dredged from a body of water, means for mixing make-up water with sludge in the hopper thereby producing an aqueous slurry, an inlet slurry pump having an inlet port coupled to the hopper for pumping slurry out of the hopper and having an outlet port, and slurry discharge piping coupled to the outlet port of the inlet slurry pump and having an outlet for discharging aqueous slurry into a delivery pipeline;

a slurry delivery pipeline connectable in flow communication with the outlet of the slurry processing unit slurry discharge piping for transporting slurry to an on-shore treatment facility for discharge into a containment vessel;

slurry pumping apparatus connectable in flow communication with the slurry delivery pipeline for pumping slurry from the slurry processing unit to the treatment facility for discharge into the containment vessel;

a return pipeline connectable in flow communication with the containment vessel for conveying process treatment water from the treatment facility to the dredging barge for discharge into the ~~hopper~~ and slurry processing unit;

make-up water pumping apparatus connectable in flow communication with the return pipeline for pumping process treatment water from the treatment facility to the dredging barge for supplying the ~~hopper and the slurry processing unit with make-up water~~ barge; and

make-up water piping coupled to the make-up water pumping apparatus, the make-up water piping including injection piping for injecting process treatment water into the slurry discharge piping and a make-up water line for discharging process treatment water into the hopper.

2. (currently amended) A closed loop slurry processing system according to claim 1, ~~the slurry processing unit including slurry discharge piping coupled between the hopper and the slurry delivery pipeline, and the make-up water pumping apparatus including:~~

a low pressure pump having an inlet port coupled to the containment vessel for receiving process treatment water and having an outlet port coupled to the inlet of the return pipeline; and

a make-up water booster pump having an inlet port coupled in flow communication with the outlet of the return pipeline and having an outlet port for supplying process treatment water to the ~~hopper~~; hopper and slurry discharge piping.

~~make-up water piping coupled to the output of the booster pump;~~
~~including an injection pipe for supplying process treatment water to the slurry dis-~~
~~charge piping and a make-up water line for supplying process treatment water to the~~
~~sludge hopper.~~

3. (currently amended) Closed loop slurry processing apparatus comprising in combination:

an on-shore treatment facility including a containment vessel for receiving slurry, means for discharging a chemical decontamination reagent into the containment vessel for treating the slurry, and means for separating sludge from the slurry, thereby yielding process treatment water and treated sludge for disposal or further treatment;

a dredging barge including a dredge for removing contaminated sludge from a body of water;

~~a hopper disposed on the barge for receiving and containing contami-~~
~~nated sludge removed from the body of water;~~

a slurry processing unit installed on the barge for mixing make-up water with sludge thereby producing an aqueous slurry, the slurry processing unit including a hopper for receiving and containing sludge dredged from a body of water, and slurry discharge piping and injection piping coupled to the discharge piping for injecting pressurized make-up water into a flow stream of aqueous slurry pumped from the hopper;

a slurry delivery pipeline connectable in flow communication with the slurry processing unit for transporting slurry from the dredging barge to the treatment facility for discharge into the containment a containment vessel;

slurry pumping apparatus connected in flow communication with the delivery pipeline for pumping slurry from the slurry processing unit to the on-shore treatment facility for discharge into the containment vessel; and

a buoyant make-up water return pipeline for conveying make-up treatment water from the on-shore treatment facility across the body of water to the dredging barge;

make-up water pumping apparatus connected in flow communication with the return pipeline for pumping process treatment water from the treatment facility to the dredge dredging barge to be used as make-up water in the hopper and in the slurry processing unit: and for injection into the slurry discharge piping; and

piping means connecting the delivery pipeline, containment vessel, return pipeline, slurry discharge piping, slurry pumping apparatus and make-up water pumping apparatus in series flow, closed loop relation, whereby process treatment

water can be used as make-up water in the slurry processing unit and returned to the containment vessel repeatedly without releasing process treatment water into the body of water while the sludge is being processed.

4. (currently amended) A closed loop slurry processing system for conveying an aqueous slurry containing contaminated sludge, removed from a body of water by a dredging barge, to an on-shore treatment facility for liquid-solids separation and chemical decontamination treatment, and after separation, conveying treatment water from the on-shore treatment facility to the dredging barge to be used as make-up water for mixing with collected sludge for producing an aqueous slurry and for adjustment of slurry specific gravity, said closed loop slurry processing system comprising, in combination:

a dredging barge including a dredge for removing contaminated sludge from a body of water;

~~a hopper disposed on the dredging barge for collecting contaminated sludge removed from the body of water;~~

a slurry processing unit disposed on the dredging barge, the slurry processing unit including a hopper for receiving and containing contaminated sludge dredged from a body of water and means for mixing make-up water with collected sludge thereby producing an aqueous slurry, and having an outlet for discharging aqueous slurry that can be pumped through a buoyant delivery pipeline;

a buoyant delivery pipeline connectable to the slurry processing unit for

conveying slurry from the dredging barge across a body of water to an on-shore treatment facility for discharge into a slurry containment vessel for chemical treatment and liquid-solids separation;

slurry pumping apparatus connectable in flow communication with the delivery pipeline for pumping slurry from the slurry processing unit to the on-shore treatment facility for discharge into the containment vessel;

a buoyant return pipeline connectable to the containment vessel for supplying process treatment water produced by the on-shore treatment facility for discharge into the hopper for producing a slurry mixture of sludge and treatment water and for use as make-up water in the slurry processing unit for adjustment of slurry specific gravity;

slurry pumping apparatus connected in flow communication with the delivery pipeline for pumping slurry from the slurry processing unit to the on-shore treatment facility;

make-up water pumping apparatus connected in flow communication with the return pipeline for pumping process treatment water from the treatment facility to the slurry processing unit; and

whereby process treatment water produced by the on-shore treatment facility can be used and recycled for use as make-up water for mixing with contaminated sludge collected in the hopper thereby producing ~~an~~ slurry mixture a slurry mixture of sludge and treatment water and for adjusting the specific gravity of the slurry in the sludge processing unit without releasing process treatment water or slurry

into the body of water while the contaminated sludge is being processed. processed,
and thereby reducing the amount of treatment water processed by the on-shore
treatment facility that must be treated to be made environmentally safe before land or
waterway disposal.

Claims 5-11 (cancelled)